

Application No.: 10/042,232

Reply to Office Action of: October 1, 2003

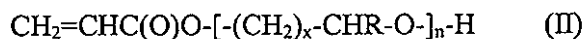
AMENDMENTS TO THE CLAIMS

Listing of Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

~~1.~~ (Previously Presented) A method for preparing an asymmetric (meth)acrylate crosslinking agent

comprising reacting an hydroxyacrylate of formula (II)



with methacrylic anhydride to form an asymmetric (meth)acrylate crosslinking agent of formula (I) and methacrylic acid



wherein,

$x = 1, 2, \text{ or } 3,$

$R = \text{H or } \text{CH}_3, \text{ and}$

$n = 1-100;$

wherein a reaction product containing the asymmetric (meth)acrylate crosslinking agent comprises less than 2 wt.% of a diacrylate, dimethacrylate, or mixture thereof.

2. (Canceled)

2 ~~3.~~ (Original) The method as claimed in claim 1, further comprising reacting an hydroxyacrylate of formula (II) and methacrylic acid in the presence of an acid catalyst.

~~3~~ 4. (Original) The method as claimed in claim 3, wherein the acid catalyst is present at from 0.1 to 5 wt.%.

~~4~~ 5. (Original) The method as claimed in claim 1, wherein the temperature is from 0 to 100°C.

~~5~~ 6. (Original) The method as claimed in claim 1, wherein the acrylate ester and methacrylic acid are reacted for from 0.5 to 36 hours.

~~6~~ 7. (Original) The method as claimed in claim 1, wherein $x = 1$, $R = H$ and the hydroxyacrylate is selected from the group consisting of diethylene glycol acrylate, triethylene glycol acrylate, tetraethylene glycol acrylate, and mixtures thereof.

~~7~~ 8. (Original) The method as claimed in claim 1, wherein the hydroxyacrylate is a polypropylene glycol acrylate with an average molecular weight of about 475.

~~8~~ 9. (Original) The method as claimed in claim 1, wherein the hydroxyacrylate is based on a polytetrahydrofuran chain.

~~9~~ 10. (Original) The method as claimed in claim ~~9~~ 8, wherein the hydroxyacrylate is 4-hydroxybutyl acrylate.

Application No.: 10/042,232

Reply to Office Action of: October 1, 2003

~~10~~²1. (Original) The method as claimed in claim ~~3~~², wherein the acid catalyst is selected from the group consisting of sulfuric acid, aromatic sulfonic acids, aliphatic sulfonic acids, aromatic sulfonic acids bound to a polymeric resin, aliphatic sulfonic acids bound to a polymeric resin, and phosphonic acids.

~~11~~¹²12. (Original) The method as claimed in claim 1, wherein a ratio of methacrylic anhydride to hydroxyacrylate is about 1:1.

~~12~~¹³13. (Original) The method as claimed in claim 1, further comprising removing methacrylic acid from a reaction mixture by distillation.

14. (Withdrawn) A polymethylmethacrylate polymer comprising the crosslinking agent of claim 1.

15. (Withdrawn) The polymethylmethacrylate polymer claimed in claim 14, comprising 3-20 wt.% of an hydroxyacrylate of formula (II).

16. (Withdrawn) The polymethylacrylate claimed in claim 14, wherein the polymethylmethacrylate is a super absorber.

17. (Withdrawn) The polymethylmethacrylate claimed in claim 14, wherein the polymethylmethacrylate is a thickening agent.

Application No.: 10/042,232

Reply to Office Action of: October 1, 2003

~~13~~ 18. (Original) The method as claimed in claim 1, wherein a ratio of the hydroxyacrylate and the methacrylic anhydride is less than 1, further comprising adding a low molecular alcohol to a reaction mixture to destroy an excess of methacrylic anhydride.

~~14~~ 19. (Previously Presented) The method as claimed in claim 1, wherein a content of impurities containing chlorine is <0.1 wt.%.

~~15~~ 20. (Previously Presented) The method as claimed in claim 1, wherein a reaction product containing the asymmetric (meth)acrylate crosslinking agent comprises less than 1 wt.% of a diacrylate or dimethacrylate.